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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,497 ¹	07/28/2003	Scot Philip Sandoval	97112.3300	6734

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

MAIL DATE	DELIVERY MODE
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06/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/629,497	Applicant(s) SANDOVAL ET AL.	
	Examiner Harry D. Wilkins, III	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,9-17,26 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7 and 9-17 is/are rejected.
- 7) ☒ Claim(s) 26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 22 May 2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-7 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al (US 5,622,615) in view of Goens et al (US 3,972,795) and Takasuka et al (JP 02-229788).

Young et al teach (see figure 1 and example 7) a method of electrowinning copper including providing an electrolytic cell (4) containing at least one anode and at least one cathode, wherein the cathode has an "active" surface area, providing a flow of electrolyte through the electrolytic cell, the electrolyte including copper and solubilized ferrous iron, oxidizing at least a portion of the ferrous ions to ferric ions at the anode,

removing (plating) at least a portion of the copper at the cathode and operating the cell at a voltage below 1.5 V and a current density greater than 26 A/ft² (~280 A/m²).

Young et al do not teach utilizing a flow-through anode.

Goens et al teach (see abstract, figures and cols. 2-3 and 7-8) a method of electrowinning copper including providing an electrolytic cell with flow-through anodes and cathodes, providing a flow of electrolyte through the cell, the electrolyte including copper and solubilized ferrous iron and removing at least a portion of the copper from the electrolyte at the at least one cathode. The flow-through cell was capable of higher efficiency than an electrowinning cell using non-flow-through electrodes.

Therefore, it would have been obvious to one of ordinary skill in the art to have performed the process of Young et al in the flow-through cell of Goens et al because Goens et al teach that the flow-through cell provided increases in copper electrowinning efficiency.

Young et al in view of Goens et al teach a single electrolyte flow inlet (injection hole) present in the electrolytic cell.

However, it was known in the prior art that utilizing the single injection hole produced a non-uniform flow profile across the cross-section of the pipe, as shown in figure 9 of Takasuka et al. Takasuka et al further show (see figures 1 and 5) that providing multiple manifolded injection holes permitted a more uniform flow rate profile across the cross-section of the pipe.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized a manifolded end plate, such as that shown by Takasuka et al, in place of the

single inlet end plate of Goens et al for the purpose of increasing flow uniformity, and thereby reaction uniformity along the entire cross-section of the pipe shaped electrolytic cell.

Regarding claims 4 and 5, the disclosed voltage of Young et al can be as low as 1.03 Volts (which is less than about 1.0 Volts).

Regarding claims 6 and 7, Young et al teach varying the flowrate of the electrolyte (see example 6) and describes it as a result effective variable. Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the flow rate of the electrolyte in the electrolytic cell.

Regarding claim 9, Young et al teach (see col. 9, lines 28-39) using electrocatalyst coated titanium as the anode. Thus, the flow-through anode (mesh) in the cell of Goens et al would have been made with the electrocatalytic coating and have performed the oxidizing of the ferrous iron.

Regarding claims 10 and 11, the electrolyte of Young et al contained 35 g/L Fe.

Regarding claims 12-14, the disclosed temperature of Young et al is 80°C (176°F). The range of temperatures disclosed by Young et al included 60°C (140°F)

4. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young et al (US 5,622,615) in view of Goens et al (US 3,972,795) and Takasuka et al (JP 02-229788) as applied to claim 1 above, and further in view of Sandoval et al (US 5,492,608).

The teachings of Young et al, Goens et al and Takasuka et al are described above.

However, Young et al do not teach a recycling of electrolyte wherein at least a portion of the ferric ions are reduced back to ferrous ions to form a regenerated electrolyte.

Sandoval et al teach (see col. 7, lines 27-37) recycling a copper electrowinning electrolyte through activated carbon modules and exposing the electrolyte to sulfur dioxide gas to reduce the ferric ions back to ferrous ions to form a regenerated electrolyte which is fed back to the cell.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the recycle line taught by Sandoval et al in the method of Young et al in order to effectively recycle the electrolyte to reduce waste. The activated carbon acts as a catalyst in the process.

Allowable Subject Matter

5. Claims 26 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

Art Unit: 1742

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw